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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/588,075	KATO, KOJIRO	
	Examiner	Art Unit	
	TERRENCE R. WILLOUGHBY	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7,8-13 and 18-20* is/are rejected.

7)☒ Claim(s) *6 and 14-17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 July 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/31/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show (i.e. lighting current (33), (spark gap (100), arc chamber (106)) as described in the specification in pages 4, 15 and 16. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 3, which recites a recessed or a protruding part is provided at the proximal parts of the two discharge electrodes, and the recessed or protruding part and the protruding part or recessed part of the discharge electrode are fitted and connected with each other, is indefinite because it is not clear and understood how the recessed or protruding part and the protruding part or recessed part of the discharge electrode are fitted and connected with each other when the claim only recites a recessed or a protruding part at the proximal parts (i.e. Fig. 7, (102a, 102b) of the two discharge electrodes. Therefore, for the purpose of examination the examiner will interpret the claim wherein a recessed or a protruding part is provided at the proximal parts of the two discharge electrodes, and a recessed or a protruding part is provided at the distal parts of the two discharge electrodes and the protruding parts or recessed parts of the two discharge electrodes are fitted and connected with each other.

Claim Objections

5. Claim 7 recites the limitation "the organic arc-suppressing insulating material" in 4 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zahlmann et al. (US 2003/0007303) in view of Altmaier et al. (US 5,754,385).

8. Regarding claim 1, Zahlmann et al. in (Fig. 2), discloses a spark gap arrester in which two conical or columnar discharge electrodes (1, 2) are arranged to face each other in a cylindrical metal case (3). See page 3, paragraphs [0042] and [0043]).

Zahlmann et al. does not disclose the plural magnetic material metal rings concentric with the discharge electrodes (Fig. 2, (1, 2)) arranged on an outer periphery of the discharge electrodes (Fig. 2, (1, 2)) as arc-suppressing plates.

However, Altmaier et al. in (Fig. 11), discloses an over-voltage protection element for discharging transient over-voltages comprising a plural magnetic material metal rings (i.e. arc-splitters plates (22, 23)) concentric with the discharge electrodes (2, 2'). See col. 6, ll. 55 thru col. 7, ll. 1-14). Further, the concentric metal rings are understood to be equivalent to the arc-splitters plates (22, 23).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the plurality of magnetic material metal rings (i.e. arc-splitters plates) concentric with the discharge electrodes as taught by Altmair et

al. in the spark gap device of Zahlmann et al. to improve the over-voltage protection behavior, especially the network follow current extinction behavior, based on the fact that the ac or arcs are resolved into a series of short partial arcs which are switched in succession, and that the sum of the partial arcs has a higher voltage requirement than the undivided arc, so that after the voltage or current becomes zero, a higher re-ignition voltages is needed than in an undivided arc (Altmaier et al., col. 2, ll. 53-67).

9. Claims 2, 4-5 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zahlmann et al. (US 2003/0007303) in view of Altmaier et al. (US 5,754,385) as applied to claim 1 above, and further in view of Zahlmann et al. (US 5,963,413) (Hereinafter "Zahlmann et al.- 413).

10. Regarding claim 2, Zahlmann et al. in view of Altmaier et al. discloses the arrester as claimed in claim 1, except for that a distal end part and proximal part of the two discharge electrodes (Zahlmann et al., Fig. 2, (2, 2')) are made of different conductive materials, and only the material of the distal end parts has heat and arc resistance.

However, Zahlmann et al. -413 in (Fig. 1), discloses a distal end part (4", 7) and proximal part (4, 8) of the two discharge electrodes (4, 8) are made of different conductive materials (i.e. brass and copper-tungsten), and only the material of the distal end parts (4", 7) has heat and arc resistance (col. 5, ll. 43-48 and col. 6, ll. 43-48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the distal end parts and proximal parts of the two

discharge electrodes as taught by Zahlmann et al. and Altmaier et al. with the different conductive materials of the distal end part and proximal part, wherein the material of distal end parts has a heat and arc resistance as taught by Zahlmann et al.-413 to prevent metal burn-up on the electrodes thereby increasing the life span of the electrodes and the over-voltage protection device.

11. Regarding claim 4, Zahlmann et al. in view of Altmaier et al. in view of Zahlmann et al.-413 discloses the arrester as claimed in claim 2, characterized in that the two discharge electrodes (Zahlmann et al., see Fig. 4, (1, 2)) are covered with an organic arc-suppressing insulating material (Zahlmann et al., Fig. 4, (4, 7)), except for the distal end parts (Zahlmann et al., Fig. 4, see the distal end parts (9) of the electrodes (1, 2) that is connected to the insulating block (14) which is not covered by the arc-suppressing material (Zahlmann et al., Fig. 4, (4, 7)) and the proximal end parts (Zahlmann et al., Fig. 4, shows the proximal end parts, which is end portion (i.e. the area opposite of the insulation block (14)) of the electrodes (1, 2) which is not covered by the arc suppressing material (Zahlmann et al., Fig. 4, (4, 7)). See Zahlmann et al., page 3, paragraphs [0045] and [0055].

12. Regarding claim 5, Zahlmann et al. in view of Altmaier et al. in view of Zahlmann et al.-413 discloses the arrester as claimed in claim 1, characterized in that a recessed part is provide on each of end surfaces facing each other of the two electrodes (Zahlmann et al., Fig. 2, discloses electrodes (1, 2) which have recessed parts (i.e. the area between electrodes (1, 2) where also the spark gap discharge space (17) meets the electrodes (1, 2)), and an insulator (Zahlmann et al., Fig. 2, (5)) is inserted across

the two recessed parts, and a spark gap (Zahlmann et al., Fig. 2, (17)) dimension is defined by the difference between the sum of depths of the two recessed parts and thickness of the insulator (Zahlmann et al.-413, col. 4, ll. 4-25 and ll. 48-67).

13. Regarding claim 7, Zahlmann et al. in view of Altmaier et al. in view of Zahlmann et al.-413 discloses the arrester as claimed in claim 2, characterized in that the arc-suppressing plates (Altmaier et al., Fig. 11, (22, 23)) are arranged over a part (Altmaier et al., Fig. 11, (5)) that is not covered with the organic arc-suppressing insulating material. Further, Zahlmann et al. in Fig. 4, discloses the distal end parts and the proximal parts of the electrodes not being covered with an organic arc-suppressing insulating material (Zahlmann et al., Fig. 4, (4, 7)). The distal end parts (9) of the electrodes (1, 2) that is connected to the insulating block (14) which is not covered by the arc-suppressing material (Zahlmann et al., Fig. 4, (4, 7)) and the proximal end parts (Zahlmann et al., Fig. 4, shows the proximal end parts, which is end portion (i.e. the area opposite of the insulation block (14)) of the electrodes (1, 2) which is not covered by the arc suppressing material (Zahlmann et al., Fig. 4, (4, 7)). See Zahlmann et al., page 3, paragraphs [0045] and [0055].

14. Regarding claim 8, Zahlmann et al. in view of Altmaier et al. in view of Zahlmann et al.-413 discloses the arrester as claimed in claim 4, except for the organic suppressing insulating material (Zahlmann et al., Fig. 4, (4, 7)) is a composite material containing an inorganic reinforcement.

However, it would have obvious to one of ordinary skill in the art at the time the invention was made to made the organic suppressing insulating material (Zahlmann et

al., Fig. 4, (4, 7)) as taught by Zahlmann et al. mentioned combination with a composite material containing an inorganic reinforcement for the desired suppression properties of the device, since it has been held to be within the general skill of the worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416. 227 f. 2d 197, 125 USPQ 416 (CCPA 1960).

15. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zahlmann et al. (US 2003/0007303) in view of Altmaier et al. (US 5,754,385) as applied to claim 1 above, and further in view of Sankey et al. (US 3,248,600).

16. Regarding claim 9, Zahlmann et al. in view of Altmaier et al. discloses the arrester as claimed in claim 1, except for an air gap is provided in order to reduce magnetism of the magnetic material metal rings used as arc-suppressing plates.

However, Sankey et al. in (Figs. 1 and 3) discloses an lighting arrester with magnetic metal rings (i.e. arc splitters (26)) comprising a air gap (see Fig. 3, i.e. which shows a gap between the magnetic coils (26)) in order to reduce magnetism of the magnetic material metal rings used as arc-suppressing plates (col. 1, ll. 41-54 and col. 3, ll. 70 thru col. 4, ll. 1-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the magnetic metal rings of Zahlmann et al. in view of Altmaier et al. device with the air gap magnetic metal ring as taught by Sankey et al. to improve the current interrupting ability in the lighting arrester.

17. Claims 3, 10-13 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zahlmann et al. (US 2003/0007303) in view of Altmaier et al. (US 5,754,385) in view of Zahlmann et al. (US 5,963,413) (Hereinafter "Zahlmann et al.-413) as applied to claims 2 and 4-5 above, and further in view of Rees (US 2,923,849).

18. Regarding claim 3, Zahlmann et al. in view of Altmaier et l. in view of Zahlmann et al.-413 discloses the arrester as claimed in claim 2, except for a recessed or a protruding part is provided at the proximal parts (Zahlmann et al.-413, Fig. 1, (4, 8)) of the two discharge electrodes (Zahlmann et al.-413, Fig. 1, (4, 8)), and a recessed or a protruding part is provided at the distal parts (Zahlmann et al.-413, Fig. 1, (4", 7)), of the two discharge electrodes (Zahlmann et al.-413, Fig. 1, (4, 8)), and the protruding parts or recessed parts of the two discharge electrodes (Zahlmann et al.-413, Fig. 1, (4, 8)), are fitted and connected with each other.

However, Ress in (Fig. 4) discloses a recessed or a protruding part (i.e. recess/grooves (18)) provided at a proximal part of an electrode (22) and a recessed or a protruding part (i.e. recess/grooves (18)) provided at a distal part of an electrode (23), wherein the recessed or protruding parts (i.e. recess/grooves (18)) of the two discharge electrodes (22, 23) are fitted and connected with each other (col. 2, ll. 26-31).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the distal end parts and proximal parts of the two discharge electrodes as taught by Zahlmann et al. mentioned combination with the recessed or protruding parts of the two electrodes as taught by Ress to securely fit the

electrodes together and establish good electrical connection within the electrodes (Ress, col. 2, ll. 26-31).

19. Regarding claim 10, Zahlmann et al. in view of Altmaier et al. in view of Zahlmann et al.-413 discloses the limitations recited above in claim 4.

20. Regarding claim 11, Zahlmann et al. in view of Altmaier et al. in view of Zahlmann et al.-413 discloses the limitations recited above in claim 5.

21. Regarding claim 12, Zahlmann et al. in view of Altmaier et al. in view of Zahlmann et al.-413 discloses the limitations recited above in claim 5.

22. Regarding claim 13, Zahlmann et al. in view of Altmaier et al. in view of Zahlmann et al.-413 discloses the limitations recited above in claim 5.

23. Regarding claim 18, Zahlmann et al. in view of Altmaier et al. in view of Zahlmann et al.-413 discloses the limitations recited above in claim 7.

24. Regarding claim 19, Zahlmann et al. in view of Altmaier et al. in view of Zahlmann et al.-413 discloses the limitations recited above in claim 4.

25. Regarding claim 20, Zahlmann et al. in view of Altmaier et al. in view of Zahlmann et al.-413 discloses the limitations recited above in claim 5.

Allowable Subject Matter

26. Claim 6 is objected to as being dependent upon a rejected base claim 1, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Combined claim 6 would be allowable over the prior art of record because the prior art does not teach or suggest a ring-shaped disc made of an organic arc-suppressing insulating material is inserted as a spacer between the plural ring-shaped magnetic material metal discs, and the spacer has a step-like sectional shape in order to fix the positions of the arc-suppressing plates and electrically insulate each arc-suppressing plate from the metal case as set forth in the claimed invention.

27. Claim 14 is objected to as being dependent upon a rejected base claim 2, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Combined claim 14 would be allowable over the prior art of record because the prior art does not teach or suggest a ring-shaped disc made of an organic arc-suppressing insulating material is inserted as a spacer between the plural ring-shaped magnetic material metal discs, and the spacer has a step-like sectional shape in order to fix the positions of the arc-suppressing plates and electrically insulate each arc-suppressing plate from the metal case as set forth in the claimed invention.

28. Claim 15 is objected to as being dependent upon a rejected base claim 3, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Combined claim 15 would be allowable over the prior art of record because the

prior art does not teach or suggest a ring-shaped disc made of an organic arc-suppressing insulating material is inserted as a spacer between the plural ring-shaped magnetic material metal discs, and the spacer has a step-like sectional shape in order to fix the positions of the arc-suppressing plates and electrically insulate each arc-suppressing plate from the metal case as set forth in the claimed invention.

29. Claim 16 is objected to as being dependent upon a rejected base claim 4, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Combined claim 16 would be allowable over the prior art of record because the prior art does not teach or suggest a ring-shaped disc made of an organic arc-suppressing insulating material is inserted as a spacer between the plural ring-shaped magnetic material metal discs, and the spacer has a step-like sectional shape in order to fix the positions of the arc-suppressing plates and electrically insulate each arc-suppressing plate from the metal case as set forth in the claimed invention.

30. Claim 17 is objected to as being dependent upon a rejected base claim 5, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Combined claim 17 would be allowable over the prior art of record because the prior art does not teach or suggest a ring-shaped disc made of an organic arc-suppressing insulating material is inserted as a spacer between the plural ring-shaped

magnetic material metal discs, and the spacer has a step-like sectional shape in order to fix the positions of the arc-suppressing plates and electrically insulate each arc-suppressing plate from the metal case as set forth in the claimed invention.

Conclusion

31. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Willox (US 3,581,154) in (Fig. 1) discloses a surge-deflecting cable3 terminator comprising a plurality of ring-shaped plates (25) of magnetic material disposed therein in coaxial face to face relationship, adjacent to and alongside the cable conductor (12). Watter et al. (2002/0167775) in (Fig. 2) discloses an over-voltage protection element and over-voltage protection means comprising arc-splitters (11) of magnetic material disposed around electrodes (2). Johnasson et al. (US 4,194,138) discloses a spark gap devices with a number of arc-resistant insulating elements which are stacked in spaced relationship to form spaces between adjacent insulating elements with each element having a through-hole.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TERRENCE R. WILLOUGHBY whose telephone number is (571)272-2725. The examiner can normally be reached on 8-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on 571-272-2084. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael J Sherry/
Supervisory Patent Examiner, Art Unit 2836

TRW
6/20/08